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## INTRODUCTION

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### **Purpose**

The purpose of this study is to determine the effectiveness of the programs which comprise the environmental management framework for the Armand Bayou Coastal Preserve. Common sense suggests that the basic question in evaluating effectiveness would be to measure how well each program is meeting its environmental management objectives. However, this type of strictly objective measurement is not feasible in the Armand Bayou watershed because environmental trend data is incomplete and management objectives have not been defined for each regulatory program.

Rather than a strictly objective approach, this report assesses the appropriateness of existing regulatory mechanisms for dealing with the environmental problems facing Armand Bayou. Agencies with responsibility for environmental regulation in the preserve have been described in terms of legal authority (legislation and rules), resources (budget and staff), and administrative priority (agency policy). By comparing this framework with current or potential environmental problems, regulatory gaps and insufficiencies have been identified, as well as overlaps and opportunities for enhanced interagency coordination. Based on this analysis, action steps for improved regulatory effectiveness have been recommended.

The findings and recommendations of this study will be utilized in ongoing management planning for the preserve. This report and the companion document for Christmas Bay are also "pilot studies" for a regulatory effectiveness assessment covering the entire Galveston Bay system.

### **Scope**

The scope of this report is to evaluate the effectiveness of the major environmental regulatory programs governing the Armand Bayou Coastal Preserve and its watershed. The overall management framework is assessed and specific program evaluations have been conducted in the following categories of environmental regulation:

- point source discharges
- storm water runoff
- protection of wetlands
- protection of living resources and habitat
- illicit waste disposal

These categories were selected because each included activities identified in the Galveston Bay National Estuary Program (GBNEP) *Priority Problems List* and the *Environmental Inventory of the Armand Bayou Coastal Preserve* as presenting existing or potential environmental problems for the preserve or the surrounding watershed.

## **Study Area Description**

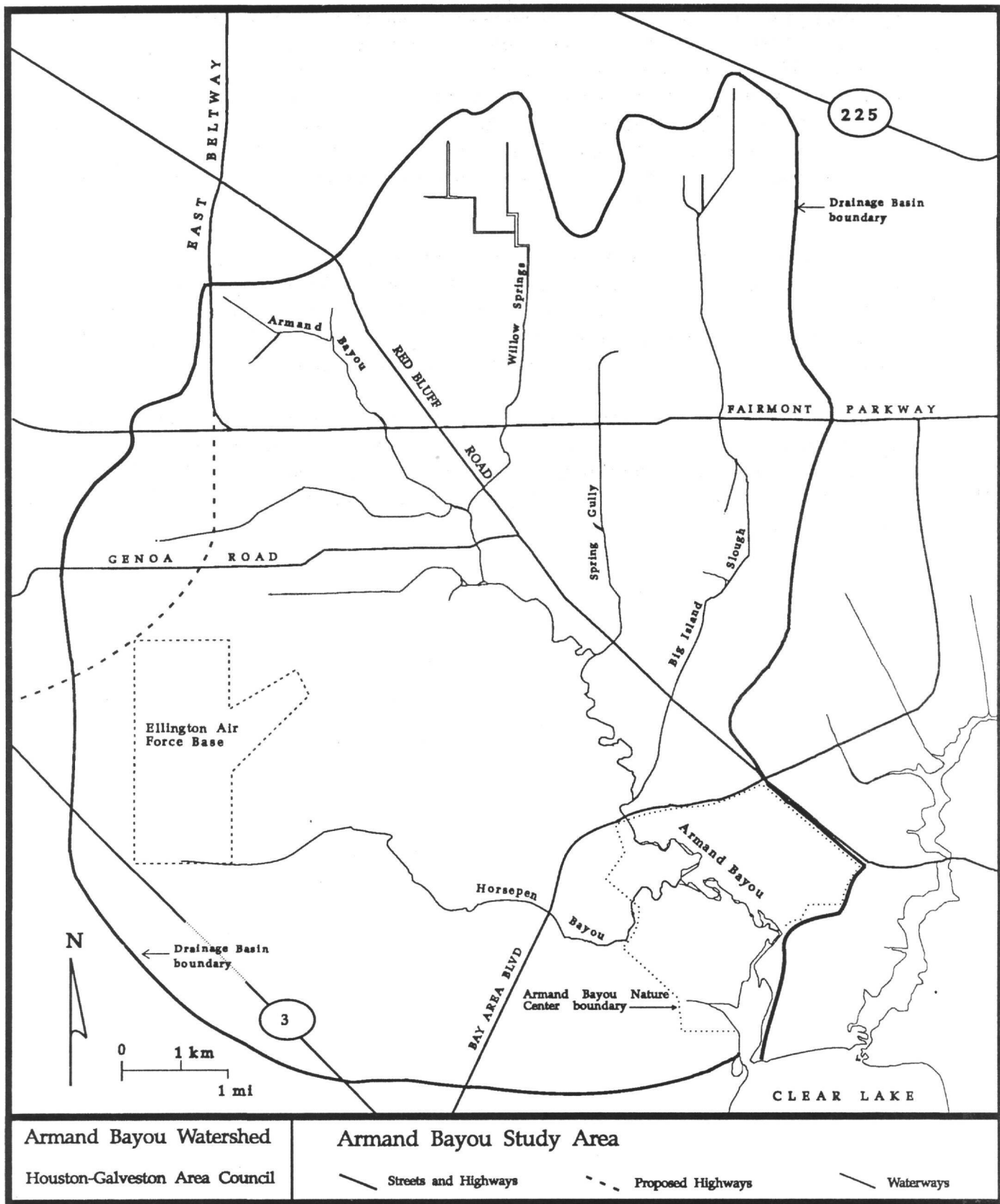
The study area for this report is the 40,647-acre Armand Bayou watershed, shown on the following page. The Armand Bayou Coastal Preserve and the popular Armand Bayou Park and Nature Center comprise a relatively small portion of the total study area. While the Bayou and its immediate surroundings are largely undeveloped, the watershed contains or is bordered by several major urban activity centers, including the NASA Johnson Space Center, the Bayport petrochemical complex, the Clear Lake oilfield, and the City of Houston's Ellington Field airport.

The environmental problems affecting Armand Bayou are significant. The water quality of the Bayou is poor, and continued degradation is possible due to existing and potential pollutant discharges. Development in and around the watershed has generated pollutant loadings from stormwater runoff as well. Subsidence has caused the loss of the majority of the wetlands contiguous to the Bayou and has extended the tidal influence. The loss of wetlands and extended tidal influence has also changed the variety of flora and fauna in the study area. Potential risks to water quality, habitat and public health are also posed by the threat of improper disposal of hazardous materials from surrounding industrial development.

However, despite its poor water quality and other physical limitations, there is strong public sentiment for preserving Armand Bayou because of its aesthetic and educational value. More important from an ecological standpoint is that the bayou has the last vestiges of ecotypes which existed before the area was developed. Armand Bayou now serves as rare habitat for fauna amid an urbanized and industrialized region. The short-term challenge in managing the preserve appears to be halting the degradation of water quality and habitat. Future management objectives will determine what longer term environmental rehabilitation measures will be necessary.

## **Methodology**

Based on the results of the *Environmental Inventory of the Armand Bayou Coastal Preserve* and the GBNEP *Priority Problems List*, the key environmental problems facing Armand Bayou were identified. The *Regulatory Survey for the Armand Bayou Coastal Preserve* provided information on the authority of the federal, state and local agencies to regulate the activities contributing to these problems. Using this background information, a series of individual survey instruments were designed for interviewing key staff of the agencies involved in environmental regulation.



The purpose of the interviews was to explore in greater detail the components of the regulatory process. Interviewees were asked to respond to questions on the adequacy of the legal authority, resources and administrative priority associated with their regulatory program. Where deficiencies or barriers to program effectiveness were noted, follow-up questions were asked to determine the root causes. The objective of this method, when used in successive interviews, was to reveal consensus opinions. The findings in the report reflect statements that were repeated several times within the same agency or across agencies. The text of the report also indicates times when opinions differed and there was not a clear consensus.

Assessments of major programs included interviews with field office, enforcement and management staff, where possible. (Appendix B contains a list of the divisions within each agency in which staff were interviewed.) This approach was taken to identify internal as well as interagency barriers to regulatory effectiveness. To stimulate frank responses, interviewees were assured that their responses would be kept confidential.

Based on the findings of the research and interviews, a series of management recommendations for the Armand Bayou Coastal Preserve were prepared and are included in this report. These recommendations constitute action steps for effective coastal preserve management under the framework of the Galveston Bay National Estuary Program.

**FIGURE 1: Agency Acronyms**

**FEDERAL**

ASCS	Agricultural Stabilization and Conservation Service
CORPS	Army Corps of Engineers
EPA	Environmental Protection Agency
FWS	Fish & Wildlife Service
NMFS	National Marine Fisheries Service
SCS	Soil Conservation Service

**STATE**

GLO	Texas General Land Office
RRC	Railroad Commission of Texas
SWCB	Texas Soil and Water Conservation Board
TACB	Texas Air Control Board
TDH	Texas Department of Health
TPWD	Texas Parks and Wildlife Department
TWC	Texas Water Commission
TWDB	Texas Water Development Board

**REGIONAL**

H-GAC	Houston-Galveston Area Council
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**LOCAL**

HCPC	Harris County Pollution Control Department
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